

CHECHIK, G.M.

Welding assembled units to a pipeline after blowing gas through  
it. Stroi. truboprov. 10 no.2:27-28 F '65. (MIRA 18:5)

1. Stroitel'noye upravleniye No.1 tresta Nefteprovodmontazh, Kazan'.

CHECHIK, G.M.

*Manufacture of pipe reducers with one seam. Stroi. truboprov.*  
10 no. 11:24 N '65. (MIRA 18:12)

1. SU-1 tresta Nefteprovodmontazh, Kazan'.

SIMKIN, G.S.; CHECHIK, I.I.

Reference book on linear measurements. Translated from the German.  
Izdatel'stvo "MIR" 1961. (MIRA 14:5)  
(Length measurement)

CHURCHIK, I.O.,  
PRESMAN, Aleksandr Samuilovich; BERG, A.I., redaktor; DEHIGIT, I.S.,  
redaktor; YELIN, O.G., redaktor; KULIKOVSKIY, A.A., redaktor;  
SMIRNOV, A.D., redaktor; TARASOV, P.I., redaktor; TRAMM, B.F.,  
redaktor; CHURCHIK, I.O., redaktor; SHAMSHUR, V.I., redaktor;  
KONASHINSKIY, A.D., redaktor; LARIONOV, G.Ye., tekhnicheskii  
redaktor.

[Centimeter waves] Santimetrovye volny. Moskva, Gos. energ. izd-  
vo, 1954. 119 p. (Massovaya radiobiblioteka, no. 203) [Microfilm]  
(Radio waves) (MLRA 7:11)

L 2176-66 EWT(d)/EWP(v)/EWP(k)/EWP(h)/EWP(l)

ACCESSION NR: AP5020758

UR/0108/65/020/008/0001/0005  
621.317

AUTHOR: Chechik, L. A. (Active member)

TITLE: The effect of changes in amplitude-frequency and phase-frequency characteristics on the reaction of linear systems

SOURCE: Radiotekhnika, v. 20, no. 8, 1965, 1-5

TOPIC TAGS: linear control system, linear system, remote control system, frequency characteristic

ABSTRACT: In the design of systems of automatic control, remote control, and communications, an estimate should be made of the effect of changes in the amplitude- and phase-frequency characteristics on the reaction of the system. Such estimates in the past were based on the Fourier and Laplace transformations, but the individual effects due to the above mentioned changes have not yet been investigated thoroughly. Consequently, the present paper carries out an analysis of the distortions of the reactions of linear systems to changes in individual frequency characteristics. The author derives approximate formulas for distortion estimates using the Duhamel integral. The equivalent circuit with

Card 1/2

L 2176-66

ACCESSION NR: AP5020758

variable parameters given in the paper permits in numerous cases the analysis of possible distortions of the signals without recourse to formulas. The approach is illustrated by a discussion of a pair of selection systems. Orig. art. has: 13 formulas.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi (Scientific-Technical Society for Radio Engineering and Electrocommunication)

SUBMITTED: 19Apr63

ENCL: 00

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NO REF SOV: 004

OTHER: 000

Card 2/2

AUTHORS: Faydysh, A. N., Chechik, L. Ye. and Chugay, A. D. SOV/138-58-8-7/11

TITLE: The Effect of the Degree of Vulcanisation on the Luminescence of Rubbers (Vliyaniye stepeni vulkanizatsii na lyuminestsentsiyu reziny)

PERIODICAL: Kauchuk i Rezina, 1958, Nr 8, pp 28 - 32 (USSR)

ABSTRACT: The luminescence of rubbers depends on the composition of the ingredients, on the degree of vulcanisation, ageing, the effect of light etc. The spectra of luminescence of rubbers prepared under various vulcanisation conditions were investigated, especially of rubber mixtures used for the preparation of fibres in the Kiev factory "Krasnyy rezinshchik". A percentage composition of the rubber mixtures is given. A mercury lamp PRK-4 was used during the experiments and the spectra recorded on a spectrograph ISP-51, on an "Izopankhrom" film. Microphotograms of the spectra were registered on a microphotometer MF-4. Photochemical reactions occur during irradiation with ultra-violet rays, and the properties of luminescence of the rubbers change. The experiments showed that the rate of photochemical reaction did not change when the samples were placed in a test tube and the air was evacuated. The exposure time varied between

Card 1/3

The Effect of the Degree of Vulcanisation on the Luminescence of Rubbers

SOV/138-58-8-7/11

10 - 20 minutes. The experiments were carried out at room temperature. Tested samples were vulcanised at temperatures of 130, 143 and 151°C for 5, 7, 10, 15, 20, 25, 30, 40 and 45 minutes. The physico-mechanical properties of these rubbers are tabulated (Table 1). It was concluded that the luminescence depends to a large degree on the period and temperature of vulcanisation. These changes are reflected in the intensity of the luminescence and also in the distribution of the energy in the spectra (Figs. 1 - 11). This method can also be used for controlling small changes in the vulcanisates which cannot be detected by other methods. It is necessary to carry out the measurements as quickly as possible so that photochemical reactions should not affect the process. A photoelectric device is recommended for these measurements. Attention should be paid to the changes in the luminescence of the vulcanisates during storing. The character of the changes in the luminescent spectra indicates that changes in the degree of vulcanisation influence various constituents of the rubbers. It is

Card 2/3



The Effect of the Degree of Vulcanisation on the Luminescence of Rubbers

SOV/138-58-8-7/11

pointed out that the character of the microphotographs depends on the spectral sensitivity of the film. There are 1 Table, 11 Figures, 6 References: 3 Soviet, 1 English, 1 German and 1 Japanese.

ASSOCIATION: Kiyevskiy zavod "Krasnyy rezinshchik" (Kiev factory "Krasnyy Rezinshchik") and Kiyevskiy gosuniversitet (Kiev University)

Card 3/3

AUTHORS: Faydysh, A.N., Chechik, L.Ye. and Chugay, A.D. SOV/138-59-3-12/16

TITLE: Investigations on the Effect of Rubber and its Components on the Luminescence of Synthetic Rubbers (Issledovaniye vliyaniya kauchuka i ingrediyyentov na lyuminestsentsiyu reziny)

PERIODICAL: Kauchuk i rezina, 1959, Nr 3, pp 50 - 54 (USSR)

ABSTRACT: Investigations were carried out on the effect of the length and temperature of vulcanisation on the luminescence of synthetic rubber mixtures (Ref 6). Some of the components and synthetic rubbers were analyzed (see table). The luminescence spectra of the following mixtures were recorded: rubber (Figure 1); zinc oxide and magnesium oxide (Figure 2); Neozone D (Figure 3); crude stearin, zinc stearate and diphenyl guanidine (Figure 4); a rubber-sulphur mixture (Figures 5 and 6); a rubber-sulphur-Captax mixture (Figure 7); a rubber-sulphur-Captax-Neozone D mixture (Figure 8); a rubber-sulphur-

Card 1/2

SOV/138-59-3-12/16

Investigations on the Effect of Rubber and its Components on the Luminescence of Synthetic Rubbers

Captax-zinc oxide mixture (Figure 9); a rubber-sulphur-Captax-zinc oxide-Neozone D mixture (Figure 10) and a rubber-sulphur-Captax-Neozone D-zinc oxide-Altax mixture (Figure 11). It was found that the highest degree of luminescence was obtained with Neozone D and zinc oxide. The luminescence of vulcanisates depends on the luminescence of magnesium oxide, zinc oxide, Neozone D, stearin and zinc stearate. The luminescence of synthetic rubbers in the long-wave-length region is influenced by the presence of magnesium oxide and zinc oxide, and in the short-wave-length region by the presence of Neozone D. Other additives affect the intensity of luminescence of the samples, but do not cause variations in the spectra. When rubber is plasticised and the intensity of luminescence increases, no appreciable changes in the spectra occur. The luminescence spectra of rubber and its components do not have a definite structure.

There are 12 figures, 1 table and 6 references of which 3 are Soviet, 2 English and 1 German.

ASSOCIATION: Gosudarstvennyy universitet i zavod "Krasnyy rezinshchik", g. Kiyev (State University and the "Krasnyy rezinshchik" factory, Kiyev)

Card 2/2

CIA-RDP86-00513R000308220020-4"

S/081/61/000/024/086/086  
B101/B110

AUTHORS: Faydysh, A. N., Chechik, L. Ye. Chugay, A. D.,  
Przhebyl'skiy, M. I.

TITLE: Rubber luminescence analysis

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 24, 1961, 590, abstract  
24P476 (Sb. "Metody lyuminescentn. analiza". Minsk, AN BSSR,  
1960, 90 - 93)

TEXT: A description is given of the apparatus and the results of rubber luminescence analysis: checking of the degree of vulcanization, of aging, composition, and rolling. The UV light exciting luminescence (L) is focused to the rubber specimen whose L is conducted to a photomultiplier. The photocurrent is recorded by a microammeter. The degree of vulcanization is checked from the change of the integral intensity of L. The rubber composition is checked on the basis of the individual spectral regions. The intensity change of L correlates with the change of tensile strength, relative elongation and free sulfur content. A relationship is noted between the intensity of L and tensile strength in the rubber aging processes. [Abstracter's note: Complete translation.]  
Card 1/1

S/138/60/000/005/011/012  
A051/A029

AUTHORS: Faydysh A.N., Chechik, L.Ye., Chugay, A.D., Przhebyl'skiy, M.I.

TITLE: The Photoelectric Method for Measuring the Diameter of Rubber  
Fibers ✓

PERIODICAL: Kauchuk i Rezina, 1960, No. 5, pp. 52 - 54

TEXT: The production of extruded rubber fibers with a circular cross section has been introduced at the Kiyev "Krasnyy Rezinshzhik" Plant. Since the uniformity of the diameter of fibers along their entire length (with a deviation of the diameter not exceeding  $\pm 0.03$  mm) is imperative for durability and strength, the measuring procedure of the diameter is of great importance. Until recently the diameter was measured with the TNP -1 (TIR-1) micrometer thickness gage. The disadvantages of this instrument are pointed out. The fiber locked between two measuring platforms in this apparatus is deformed reducing its diameter by 0.05 - 0.08 mm distorting the results of the measurements. The readings on this apparatus also depend on the position of the fiber on the lower platform. Finally, no

Card 1/3

S/138/60/000/005/011/012  
A051/A029

The Photoelectric Method for Measuring the Diameter of Rubber Fibers

measurement of the ovalness of the fiber can be made here. The attempt to use the ME-1 (MB-1) microscope also met with failure and also the dioscope is unsuitable according to the authors. Lapetov's method performed by measuring the average size of the area of the cross section determined from the weight of a given number of fibers of given length, is only applicable to the average diameter of a series of fibers and cannot be used for single fibers. The authors have developed the photoelectric method which enables one to check the oval shape and the thickness of the fiber according to its length with an accuracy of 0.01 mm. The general view of the ФЭИД-1 (FEID-1) photoelectric instrument is shown in Figure 1 and the working diagram in Figure 2. The main part is the differential ФЭЦУ-10 (FESU-10) sulfur-silver photoelement. It consists of two independently functioning halves. The measured fiber is placed into a carriage. A complete description of the instrument is given in addition to its functioning principle. The FEID-1 photoelectrometer has been installed at the "Krasnyy Rezinshzhik" Plant. In comparing the measurements of the TIR-1 and that of the FEID-1 instruments, it was found that the readings of the TIR-1 were less by 0.05 to 0.09 mm, which means an overexpenditure of rubber mixtures

Card 2/3

S/138/60/000/005/011/012  
A051/A029

The Photoelectric Method for Measuring the Diameter of Rubber Fibers  
by 30%. The described instrument can be successfully applied to the measurement of fibers from various other materials, such as cotton and capron cord. There are 1 sketch and 1 diagram.

ASSOCIATION: Kiyevskiy zavod "Krasnyy Rezinshzhik" i Kiyevskiy gosudarstvennyy universitet im. T.G. Shevchenko (Kiyev Plant "Krasnyy Rezinshzhik" and the Kiyev State University imeni T.G. Shevchenko)

Card 3/3



S/138/60/000/008/009/015  
A051/A029

AUTHORS: Przhebyl'skiy, M.I.; Chugay, A.D.; Chechik, L.Ye.

TITLE: Static Electricity in Rubber Manufacturing

PERIODICAL: Kauchuk i Rezina, No. 8, 1960, pp. 50 - 54

TEXT: Static electricity is obstacle in production and a cause for faulty material, fires and explosions. It appears easily in rubber production, especially in manufacturing rubber glues and rubberized fabrics. (Refs. 1 - 4). In the presence of the various organic solvents, dust particles, powders of rubber mixtures, etc., this can be particularly dangerous. An electrostatic discharge can be detrimental to a tire's performance (Ref. 10). G.S. Kryshchak, G.A. Spynu and V.A. Reshetnikov of the Institut Avtomatiki Gosplana UkrSSR (Institute of Automation of the UkrSSR State Plan) and the Laboratories of the "Krasnyy Rezinshchik" Plant developed an instrument for the measurement of the magnitude and sign of static electricity discharges. A compensation device is included in the instrument to protect it against changing conditions, such as those due to oxidation and dirt clogging the system. The aging of the tubes is checked periodically with a calibrating disk. Various magnitudes of discharges are measured by a divider ( a

Card 1/ 4

## Static Electricity in Rubber Manufacturing

S/138/60/000/008/009/015  
A051/A029

scale switch) and the maximum magnitude which can be measured is 100 kv/cm. The accuracy of the measurements and reproducibility of the results is  $\pm 2\%$ . The instrument was used in measuring the static electricity of different rubbers during the production process. It is noted that most rubbers have a negative charge, the highest being in smoked sheets. It is pointed out that the charge can change both in magnitude and in sign during transportation of the rubber, storage and when subjected to different mechanical stresses or particularly during mastication (Fig. 4). A similar overcharge is characteristic for natural rubber during the rolling process (Fig. 5). Carbon black mixtures have no charge at any time during the rolling process. Rubber glue mixtures which are used in manufacturing thin-walled dipped articles were found to have no charge. High charges were noted in rubberizing cable fibers. The change in the rubber charge during deformation was also recorded using the described instrument. When expanded by 200%, the charge drops almost to zero in articles with an initial charge. When the article reverts back to its original dimensions independently, the charge increases abruptly and usually exceeds the initial value. It is stated that this electric elastic effect is maintained in all rubber articles, such as heating pads, plates, etc. As a result of the investigations carried out by the authors, it was established that the greatest hazard from static electricity, i.e., of explosions, was found in the pro-

Card 2/ 4

Static Electricity in Rubber Manufacturing

S/138/60/000/008/009/015  
A051/A029

duction of rubber glues, in the mixers and when rubberizing fabrics, due to the high electrostatic charges and the presence of explosive concentrations of gasoline. Various radio-active sources are recommended (Ref. 11) for combating this hazard by removing the static charges. The Soviet industry has not as yet produced reliable radio-active substances for this purpose. The manufacture of rubber glues is being carried out in an atmosphere of inert gases in the mixers, which eliminates the dangers of fire. There are 6 figures and 11 references: 8 Soviet, 3 English.

ASSOCIATION: Kiyevskiy zavod "Krasnyy Rezinshchik" (Kiyev Plant "Krasnyy Rezinshchik")

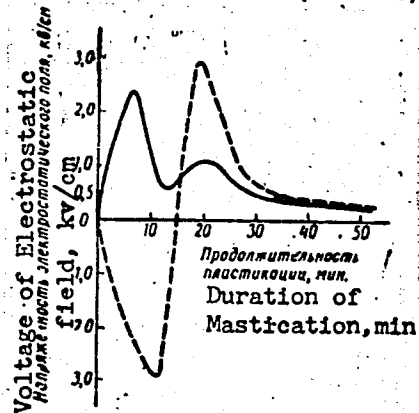
Card 3/4

# Static Electricity in Rubber Manufacturing

S/138/60/000/008/009/015  
A051/A029

Figure 4:

Cases of the Changes in the Voltage of the Electrostatic field of Natural Rubber During Its Mastication (2 Cases).

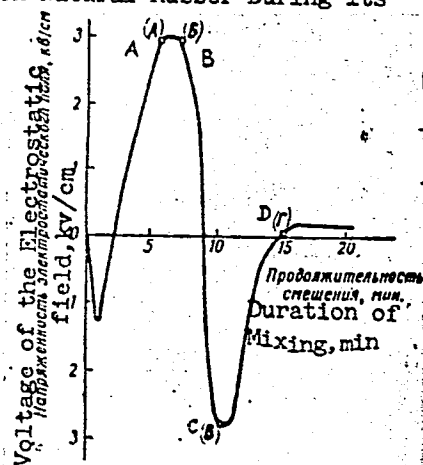


A-introduction of stearin into natural rubber; B-introduction of captax; C-introduction of zinc white; D-introduction of sulfur.

Card 4/4

Figure 5:

Change in the Voltage of the Electrostatic field of a Standard Mixture Based on Natural Rubber During Its Preparation on Rollers:



S/032/60/026/009/016/018  
B015/B058

AUTHORS: Przhebyl'skiy, M. I., Chugay, A. D., Chechik, L. Ye.,  
Polyaninova, N. A., Dizik, V. Yu., Laborers

TITLE: New Control Methods at the zavod "Krasnyy rezinshchik"  
("Krasnyy rezinshchik" Plant)

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 9,  
pp. 1154 - 1155

TEXT: Some new control methods for technological processes and finished-  
products of the rubber industry are described. They were elaborated at  
the laboratory of the Kiyevskiy zavod "Krasnyy rezinshchik" (Kiyev  
"Krasnyy rezinshchik" Plant) jointly with workers of the institutes. A  
photoelectric instrument with an  $\phi$ CCY-10 (FESSU-10)<sup>15</sup> photoelement is used  
for determining the rubber-thread diameter, instead of the TWP-1 (TIR-1)<sup>28</sup>  
micrometer thickness gauge used hitherto. An instrument for measuring  
the electrostatic charges on the surface of finished and semifinished  
products was designed jointly with the Institut avtomatiki Gosplana USSR  
(Institute of Automation of the Gosplan of the UkrSSR) under the direction

Card 1/3

New Control Methods at the zavod "Krasnyy rezinshchik" ("Krasnyy rezinshchik" Plant) S/032/60/026/009/016/018 B015/B058

of G. S. Krihtab. The instrument consists of 3 parts, i.e., the test head, the electronic part with the potentiometer of the electrostatic field and the current source. The test head contains 2 electrode systems, one for measuring the charge and the other for measuring the digit sign of the charge. Measurements showed that the majority of rubber types and loose admixtures possess a negative or positive charge even before treatment. The charge of the rubber changes markedly during plastification. A portable, inertialess measuring instrument of the type MT-1 (IT-1) was designed under the direction of L. V. Srechnikov jointly with the Kiyevskiy politekhnicheskii institut (Kiyev Polytechnic Institute) for measuring the press-plate temperature of vulcanizing presses in the measuring range of from 100° to 200°C. The measuring circuit represents an unbalanced d.c. bridge with a millivoltmeter as indicator. The refractometric method is used instead of the gravimetric one for determining the concentration of rubber adhesive and synthetic latex; an PN (RL) refractometer-saccharometer and an ON-7 (OI-7) electric lamp being used. A photoelectric instrument for the luminescence analysis of rubber was designed jointly with collaborators of the kafedra eksperimental'noy fiziki Kiyevskogo universiteta (Chair of Experimental Physics of Kiyev

Card 2/3

New Control Methods at the zavod "Krasnyy  
rezinshchik" ("Krasnyy rezinshchik" Plant)

S/032/60/026/009/016/018  
B015/B058

University) under the direction of A. N. Faydysh. It consists of 4 units:  
an Hg-quartz lamp, an optical chamber, an  $\phi Y-17$  (FEU-17)<sup>23</sup> photomultiplier  
with amplifier and microammeter, as well as the current source of the  
photomultiplier.

ASSOCIATION: Zavod "Krasnyy rezinshchik" ("Krasnyy rezinshchik" Plant)

Card 3/3

FAYDYSH, A.N.; CHECHIK, L.Ye.; CHUGAY, A.D.; PRZHEBYL'SKIY, M.I.

Control of the degree of vulcanization of rubbers with the aid of  
an instrument for luminescence analysis. Kauch.i rez. 20 no.5:  
50-53 My '61. (MIRA 14:5)

1. Kiyevskiy zavod "Krasnyy resinshechik."  
(Vulcanization) (Luminescence)



CHECHIK, M.O.

Elections to the Soviets in 1929 and the Communist Party's struggle  
for the consolidation of the Soviets. Trudy LKI 24:39-55 '59.  
(MIRA 14:9)

1. Kafedra marksizma-leninizma Leningretskogo korablestroitel'nogo  
instituta.

(Russia--Politics and government)

CHECHIK, N. O.

PA 34783

USSR/Physics

Photoelectric Effect

Photometry

Apr 1947

"Photoelectric Photometry of Very Weak Light Currents on the Basis of Secondary Electron Amplification," N. O. Chechik, 4 pp

"Doklady Akademii Nauk SSSR" Vol LVI, No 2

The measurement and discovery of very weak light currents is at the present time an actual problem confronting scientific research work in the field of combination scattering of light, the study of the brilliance of luminophors, projection searching of the atmosphere, astrophysics, as well as a number of

ID

34783

USSR/Physics (Contd)

Apr 1947

other branches of science and technology. The use of photomultipliers (secondary electron multiplier with a photocathode) makes it possible under certain conditions to measure and discover very weak light currents.

ID

34783

PA 4/49T70

CHECHIK, N. O.

USSR/Electricity

Apr 48

Amplifiers, Direct Current  
Currents, Electric - Measurements

"Direct-Current Amplifiers," N. O. Chechik, Inst of  
Automatics and Telemekh, Acad Sci USSR, 9 pp

"Zavod Lab" Vol XIV, No 4

Describes principle of amplifier in measuring in-  
struments and methods for reducing grid current,  
stabilization, and increasing range of currents  
measured.

4/49T70

CHECHIK, N.O.  
B. Ab.

C-4. *Plan recording*  
*Rel. Apparatus*  
*(optical)*

676. Photometric photography of optical luminance of intermittent curves. E. A. Pavlov and E. O. Chudak (J. tech. Physics, USSR, 1968, 38, 55-59). — At present the principal method used for determining the character of changing of luminance of intermittent action is visual photometry. The main difficulties are the impossibility of registering the initial stage, the personal error, and difficulties in comparative measurement. These errors can be eliminated by use of a photometric method. It is based on a method used previously for recording very weak light, and on the use of secondary electronic amplification in which a Microsky tube is used as amplifier. Results obtained by visual methods show a considerable scatter of points, particularly at the origin and end of the curve, whereas the points determined photoelectrically lie on the curve.  
W. Hoeszs.

CHECHIK, N. O.

PHASE X                      TREASURE ISLAND BIBLIOGRAPHICAL REPORT                      AID 605 - X

BOOK

Call No.: AF644052

Authors: CHECHIK, N. O., FAYNSHTEYN, S. M. and LIFSHITS, T. M.

Full Title: ELECTRONIC MULTIPLIERS

Transliterated Title: Elektronnyye umnozhiteli

PUBLISHING DATA

Originating Agency: None

Publishing House: State Publishing House of Technical and  
Theoretical Literature

Date: 1954

No. pp.: 420

No. of copies: 6,000

Editorial Staff

Editor-in-Chief: Luk'yanov, S. Yu.

PURPOSE AND EVALUATION: The book is written for scientists and engineers doing research in the electric multiplier field of experimental physics. The authors of the book performed the task of bringing together information from a large number of papers (over 700) previously scattered in scientific journals. The editor of the book states in his foreword that similar works have not yet been published in Soviet and foreign literature. This may be true as concerns the USSR. In the English language, however, the book by S. Rodda Photo Electric Multipliers (MacDonald & Co., London, 1953) is certainly comparable, although the Soviet book is more detailed than

1/11

Elektronnyye umnozhiteli

AID 605 - X

the English one. Also, a claim to priority could be advanced by Vladimir Kosma Zworykin and E. G. Ramberg (both of R.C.A.) whose book Photoelectricity and its Application (John Wiley & Sons, 1949) has several chapters devoted to the phenomena of secondary and photoelectric emission, and the multiplier phototube and its many scientific and industrial applications. Finally, there are several books in the English language dealing with individual aspects of secondary electron emission and photomultiplier applications in chemistry, metallurgy, optics, astronomy, etc. The book of the Soviet authors is without any doubt the most complete, in particular as concerns two fields of application of photomultipliers: photoelectric photometry, and scintillation and particle counting. The application of photomultipliers in sound recording and projection and in television is not included in the book. Much of the material in the book is taken from American sources, including some illustrations.

## TEXT DATA

Coverage: The book gives an account of the development and fields of use of photoelectric multiplier tubes. It presents the theories of photoemissive effect and of secondary electron emission, and describes the structure, design, production and operating characteristics of electron multipliers. The authors devote much attention to

2/11

AID 605 - X

Elektronnyye umnozhiteli

the various applications of photomultipliers, in particular in photography and particle detection and counting. In the introduction the authors enumerate Russian and Soviet contributions to the development of this branch of experimental physics. The authors distributed their work as follows: N. O. Chechik wrote section 3 of Chapter I and Chapters VI, VII, VIII, IX and X; S. M. Faynshteyn wrote sections 5 and 6 of Chapter I and Chapters II and IV; T. M. Lifshits wrote sections 1, 2 and 4 of Chapter I and Chapters III and XI; Chapter V and the Introduction were written jointly. The book contains 33 tables and 297 illustrations.

Table of Contents

Foreword of the Editor  
Introduction

Ch. I Photoelectronic Emission

1. Electrons in metals, semiconductors and insulators.  
Work function
2. Fundamental laws of photoelectric effect
3. Normal and spectral sensitivity of photocathodes
4. Selective photoelectric effect
5. Photoelectric effect of composite cathodes;  
spectral distribution curves, and mechanism of  
emission.

Pages

8-10

11-14

15-55

15-23

23-28

28-36

36-38

39-48

3/11

Elektronnyye umnozhiteli

AID 605 - X

	Pages
6. Spectral and electric characteristics of composite cathodes	48-55
Ch. II Secondary Electron Emission	56-89
7. Mechanics of the phenomenon	56-63
8. Secondary emission from metals	63-66
9. Secondary emission from semiconductors, insulators and composite cathodes	66-72
10. Properties of materials used for secondary emission	72-89
Ch. III Photo-multiplier Design	90-122
11. Amplification of electron currents through secondary emission	90-98
12. Focusing electron beams in electron multipliers	98-108
13. Photo-multiplier design	108-122
(a) Magnetic multiplier	109-112
(b) Electrostatic multipliers	112-122
Ch. IV Making Photoelectric Multipliers	123-149
14. Selection of materials and their properties	123-129
15. Production of high vacuum; degasification gas absorbers	129-134
16. Making Kubetski phototubes	134-141



Elektronnyye umnozhiteli

AID 605 - X

	Pages
17. Making electrostatic multipliers	141-145
(a) Timofeyev multipliers	141-142
(b) Vekshinskiy multipliers	142
(c) Multipliers with caesium-antimony cathode and with oxidized-caesium concave dynodes	142-144
(d) Multipliers with distributed resistance of the FEU RS-type	144-145
18. Other multiplier designs	145-149
(a) Industrial (R.C.A. and E.M.I.) types with caesium-antimony emitters	145-146
(b) Types with oxidized magnesium emitters	146-147
(c) With beryllium surfaces	147
(d) With copper-beryllium emitters	147-149
Ch. V Parameters and Characteristics of Photo-multipliers	150-188
19. Amplification factor and normal sensitivity	150-157
20. Dark current	157-162
21. Stability of parameters and characteristics	163-166
22. Spectral response curves and frequency distribution (dynamic characteristics)	166-174

Elektronnyye umnozhiteli

AID 605 - X

Pages

23. Characteristics of various types of photo-multipliers	174-179
24. Problems of current supplies	179-188
Ch. VI Electric Fluctuations and Threshold of Sensitivity	189-207
25. Sources of internal electric fluctuations	189-195
26. Root-mean-square value of the fluctuation voltage	195-198
27. Relation between the signal shot noises and interference voltages	198-204
28. Measurement of weak light beams and sensitivity threshold	204-207
Ch. VII Photoelectric Photometers	208-222
29. Direct-reading photoelectric photometers	208-212
30. Null-method photoelectric photometers	212-218
(a) Compensation method	213-216
(b) Flicker method	216-217
(c) Substitution method	217-218
31. General design of photoelectric photometers	219-222
Ch. VIII Application of Photomultipliers in Astronomy and Atmospheric Optics	223-241

Elektronnyye umnozhiteli

AID 605 - X

	Pages
32. Electrophotometry of solar spectrum	223-224
33. Stellar photoelectric spectrophotometry	224-237
34. Certain applications of photomultipliers in atmospheric optics	237-241
Ch. IX Application of Photomultipliers in Spectral Analysis	242-277
35. Advantages of the photoelectric method of measurement	242-245
36. Light sources, deficiencies and their elimination	245-248
37. Elimination of the background light of the continuous spectrum	248-250
38. Effect of the dark current and diminishing its influence	250-255
39. Direct-reading method, based on the upsetting of bridge balance	255-257
40. Null-measuring methods	257-261
41. Arrangements of automatic spectral analysis	261-271
42. Automatic recording spectrophotometer	271-277
Ch. X Application of Photomultipliers in Physical and Chemical Research	278-319

Elektronnyye umnozhiteli

AID 605 - X

Pages

43.	Fundamentals of photoelectric colorimeters and nephelometers	278-285
44.	Examples of application	285-296
45.	Study of spectral distribution curves of luminescent sources	297-301
46.	Study of time characteristics of luminescent sources	301-309
47.	Intensity measurements in Raman spectra (application of photomultipliers for the study of scattered radiation)	309-319
Ch. XI	Application of Multiplier Tubes for Scintillation and Particle Counting	320-395
48.	Introduction	320-321
49.	Background light	322-328
50.	Duration of scintillation pulses	328-331
51.	Measurement of particle and quantum energy with a scintillation counter	331-336
52.	Design of scintillation counters	336-342
53.	Luminescent materials used in scintillation counters	342-357

Elektronnyye umnozhiteli

AID 605 - X

	Pages
54. Coincidence circuits for scintillation counters	357-361
55. Detection of fast heavy particles	361-369
56. Electron detection	370-371
57. X- and Gamma-rays detection	371-377
58. Neutron detection	377-382
59. Cherenkov radiation counters	382-390
60. Detection of particles and quanta with electron multipliers without luminescent activation (Allen type)	390-395
Appendix	396-404
Table I Some basic physical constants	397
Table II Units of light and their dimensions	397-398
Table III Brightness and color temperatures of tungsten	398
Table IV Spectral distribution of energy of an incandescent tungsten filament	399
Table V Curves of the eye sensitivity	399
Table VI Color temperature of some sources of radiation	400
Table VII Brightness of light sources	400-401
Table VIII Reflection, transmission and absorption factors of various bodies and media	401-402

9/11

Elektronnyye umnozhiteli

AID 605 - X

	Pages
Table IX Regular reflection and diffuse reflection factors of certain bodies	402
Table X Approximate values of short-wave transmission boundaries of various materials	403
Table XI Certain light filters produced in the USSR	403
Table XII Dependence of the atmosphere transparency upon its condition	404
Table XIII Average values of the spectral atmospheric transparency	404

The table of contents gives a list of 20 reference tables included in the text.

No. of References: 715, mostly from 1930 up to 1953. Approximately one half of the references are non-Russian.

Facilities: In their Introduction, the authors enumerate several contemporary Soviet scientists and engineers who contributed to the development of the study of photoemission and of secondary electron emission. In particular they list: P. I. Lukirskiy and N. N. Semenov, who in 1920 investigated experimentally secondary electron emission of mercury; L. A. Kubetskiy, P. V. Timofeyev,

Elektronnyye umnozhiteli

AID 605 - X

S. A. Vekshinskiy, Ye. G. Kormakova, designers of the original Soviet photomultipliers; P. V. Timofeyev, A. V. Afanas'yeva, N. S. Khlebnikov, A. I. Pyatnitskiy, S. Yu. Luk'yanov, A. Ya. Vyatskin, A. Ye. Kadyshevich, N. D. Morgulis, M. M. Vudynskiy, P. M. Morozov, M. S. Kosman, D. V. Zernov, R. M. Aranovich, scientists who studied experimentally the phenomena of secondary emission; N. N. Lusheva, S. S. Prilezhayev and some of the above-mentioned scientists who investigated the caesium-treated antimony as material for the photocathode. T. N. Badikova designed in 1939 an electron multiplier with a caesium-treated copper and sulphur emitter. In 1940-41, T. S. Vil'dgrube and V. S. Parkhomenko produced multipliers with caesium-antimony dynodes. S. M. Faynshteyn, Mekhov, Ye. G. Kormakova and others constructed new types of electrodes. S. G. Natanson and S. F. Rodionov, in the field of astronomy, have used photomultipliers.

11/11

CHECHIK, Nikolay Oskarovich; BERG, A.I., redaktor; DZHIGIT, I.S., redaktor;  
YELIN, O.G., redaktor; KULIKOVSKIY, A.A., redaktor; MOZHZHEVELOV, B.N.  
redaktor; SMIRNOV, A.D., redaktor; TARASOV, F.I., redaktor; TRAMM B.F.  
redaktor; CHECHIK, P.O., redaktor; SHAMSHUR, V.I., redaktor; ZHIGAREV,  
A.A., redaktor; VORONIN, K.P., tekhnicheskii redaktor.

[Photoelectric cells and their use] Fotoelementy i ikh primeneniye  
Moskva, Gos.energ.izd-vo, 1955. 111 p. (Massovaya radiobiblioteka  
no.228) (MLRA 8:11)

(Photoelectric cells)



*Chechik, N.O.*

USSR/ Electronics - Blind aids

Card 1/1 Pub. 89 - 30/30

Authors : Chechik, N.

Title : Light locators for the blind

Periodical : Radio 6, 63 - 64, Jun 1955

Abstract : Two types of light locators (warning signals for blind) based on the utilization of external light sources - diffused solar light and natural sources of light - are described. The modulation frequency of the light stream reflected by any given obstacle is picked up by a lens and directed to a photo element cathode where it is converted to an audio (warning) signal. The principle of operation of the locator is described in detail. Drawing.

Institution : .....

Submitted : .....

CHUCHIK, N. S.

KUPRIYANOVICH, Leonid Ivanovich.; BERG, A.I., redaktor. DZHIGIT, I.S., redaktor; KULIKOVSKIY, A.A., redaktor; SMIRNOV, A.D., redaktor; TARASOV, F.I., redaktor. TRAMM, B.F., redaktor; CHUCHIK, N.S., redaktor; SHASHUR, V.I., redaktor; TARASOV, F.I., redaktor; VORONIN, I.P., tekhnicheskii redaktor.

[Pocket transceivers] Karmannye radiostantsii. Moskva, Gos.energ. izd-vo, 1957. 31 p. (Massovaya radiobiblioteka, no.267)

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Zukor Moiseyevich; ZERNOV, D.V., redaktor; ZHABOTINSKIY, Ye.Ye.,  
redaktor; GAVRILOV, S.S., tekhnicheskiy redaktor

[Electron multipliers] Elektronnyye umnozhiteli. Izd. 2-oe, dop. 1  
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(MLRA 10:2)

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(QUARANTINE, in various diseases,  
chickenpox (Rus))

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Vod. i san. tekhn. no.5:6-8 My '58. (MIRA 11:6)  
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TH7469.A1C55

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Stable anionic allyl-substituted isoprene (Synthesis of  
Monomers for the Synthesis of Synthetic Rubber) Latexes, Osmolysis, 1960.  
500 p. Russian ally. Issued. 4,500 copies printed.

Specialized Agency Consideration: Latexes from Monomers. Specialized Agency  
Consideration: Osmolysis. 1960.

Ed.: S.A. Budo and Ye. I. Chechik. Pub. No. S.A. 500/100.

REMARKS: This book is intended for scientists, engineers and technicians work-  
ing in the synthesis of rubber, plastics, and previous related industries, and  
in scientific research institutions affiliated with these industries.

CONTENTS: The book contains articles which report on research carried out at the  
Scientific-Technical Institute for Synthetic Rubber and  
Plastics (Scientific-Technical Institute for Synthetic Rubber and  
Plastics, S.A. Budo) and the Scientific-Technical Institute for Synthetic  
Rubber and Plastics (Scientific-Technical Institute for Synthetic Rubber and  
Plastics, S.A. Budo).

(The Scientific Institute for Synthetic Rubber and Plastics, S.A. Budo, is  
located in the city of Moscow, U.S.S.R. It is a branch of the Scientific-  
Technical Institute for Synthetic Rubber and Plastics, S.A. Budo, which is  
one of the main scientific centers in the U.S.S.R. for the study of the  
chemistry of rubber, plastics, and previous related industries. The  
institute is engaged in the study of the properties of synthetic rubber,  
plastics, and previous related materials. The results of the research are  
published in the form of articles, books, and previous related articles.)

# TABLE OF CONTENTS:

## Foreword

X. Fridman, L.F., and Ye. I. Chechik. Thermodynamic Calculation of the  
Equilibrium between Isoprene and Isoprene - Isoprene - Isoprene 3

Yakovlev, L.F., and Ye. I. Chechik. Investigation of Processes of Separating  
C<sub>5</sub> Hydrocarbons by Rectification Methods. Report I. On the Separation of  
Branched Compounds of the Condensed Isoprene Hydrocarbons by the Recti-  
fication Method 25

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C<sub>5</sub> Hydrocarbons by Rectification Methods. Report II. Separation of C<sub>5</sub>  
Hydrocarbons by Azeotropic Rectification with Methyl Formate 28

Yakovlev, L.F., Ye. I. Chechik, Ye. I. Kozlov, Ye. I. Kozlov, Ye. I. Kozlov,  
Kozlov, L.F., and Ye. I. Chechik. Investigation of Processes of Separating  
C<sub>5</sub> Hydrocarbons by Rectification Methods. Report III. Concentration of Iso-  
prene of the One-Step Dehydrogenation of Isoprene by Azeotropic Rectification  
with Methyl Formate 42

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Chemisorption with Cuprous Chloride. Report I. Chemisorption of Isoprene  
with Aqueous Solutions of Cuprous Chloride 55

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from Mixtures of C<sub>5</sub> Hydrocarbons by Chemisorption with Cuprous Chloride.  
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Report I. Separation of Isoprene with Cuprous Sulfate Solution 69

End-36

11

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[Technological progress in the U.S.S.R.] Nauchno-tekhnicheskii progress v SSSR. Moskva, Ekonomizdat. 1962. 274 p.  
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SO: Sum. No. 480, 9 May 55

CHECHIK-KUNINA, YE. A.

PA76T54

**Medicine - Eye, Wounds and Injuries May/June 1948**  
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**"Homoplastics for Traumatic Defects of the Capsules of the Eyeball," Ye. A. Chechik-Kunina, State Cen Ophthalmol Inst imeni Gel'gol'ts, 1/2 p**

**"Vest Oftalmol" Vol XXVII, No 3**

**Describes use of homologous tissues and method for saving eyes subjected to serious trauma, especially wounding of the eyeball. Used external sutures to close wounds. Conducted tests on ten rabbits. Four had their eyes restored and of these, three regained full use of various functions of the eyes.**

76T54

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Experimental clinical use of the Soviet vitamin-tea tannin preparation. V. G. Smagin, D. I. Sinepol, and V. V. Chechilova (Leningrad Sanit.-Hyg. Med. Inst.). *Klin. Med.* 34, No. 8, 82-7(1958).—Combined use of tea tannin and ascorbic acid reduces considerably the permeability of the capillaries. The action of tea tannin is only effective during its administration. Upon discontinuation the permeability rises rapidly. The most beneficial effect of tea tannin is noticed in capillary toxosis with its increased permeability and fragility.

A. S. Mirkin

Из кафедры пропедевтики  
Внутренних Заболеваний Ленинградского  
Санитарно-гигиенического медицинского  
института.

24481

S/126/61/011/006/007/011  
EO32/E314

9.4300 (1035,1043,1160)

AUTHORS: Sachenko, V.P. and Chechin, G.M.

TITLE: On the Probability of Radiationless Transitions  
in the Conduction Bands of Alkali Metals

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol. 11,  
No. 6, pp. 935 - 941

TEXT: In the case of metals at not too low a temperature and electrons in the energy range of the order of  $kT$  from the Fermi surface the probability of electron-phonon collisions is much greater than the probability of electron-electron collisions. However, electron-electron collisions become important in the case of conduction-band excitation energies greater than  $kT$  (Ref. 1: Landsberg, P.T. - Proc.Phys.Soc., 1949, A62, 806; Ref. 2: Blokhin, M.A., Sachenko, V.P. Izv. Ak.nauk SSSR, Ser.fiz., 1960, Vol. 24, No. 4, 397). However, the latter authors have used the Born approximation to compute the probability of radiationless transitions. It is stated that this method does not, strictly speaking, apply in the case

Card 1/13

24481

S/126/61/011/006/007/011  
E032/E314

On the Probability of ....

of conduction electrons and, moreover, there is an error in Eq. (10) of Ref. 2. The present authors report an attempt to compute the probability of radiationless transitions without the use of the Born approximation. The problem is formulated as follows. Consider the excited state of the conduction band from which an electron with a wave vector  $k_1$  is absent.

Let  $P(k_1, k_2, k_3, k_4)$  be the probability per unit time of a radiationless transition, as a result of which the wave vectors of two electrons  $k_2$  and  $k_3$  become equal to  $k_1$  and  $k_4$ , respectively. The total probability  $P(k_1)$  that the vacancy  $k_1$  will be filled is obtained by integrating  $P(k_1, k_2, k_3, k_4)$  over all possible values of  $k_2, k_3, k_4$  which are allowed by the momentum and energy-conservation law

$$k_2 + k_3 = k_1 + k_4, \quad k_2^2 + k_3^2 = k_1^2 + k_4^2 \quad (1).$$

Card 2/13



On the Probability of ....

S/126/61/011/006/007/011  
E032/E314

The values of  $k_i$  (at absolute zero) must, of course, lie below the limiting Fermi value  $k_F$ , i.e.

$$k_4 \geq k_F, \quad k_1 \leq k_2 \leq k_F, \quad k_1 \leq k_3 \leq k_F \quad (2).$$

The potential energy of the electrons is then assumed to be of the form

$$U(r) = \frac{e^2}{r} e^{-\alpha r} \quad (3)$$

where  $r$  is the distance between the electrons and  $\alpha$  is a constant of the order of  $1\text{\AA}^{-1}$  (both  $\alpha$  and

the wave vectors are expressed in units of  $\text{\AA}^{-1}$ ). In the Hartree-Fock approximation  $P$  will not contain exchange terms (Ref. 1). Thus the problem is reduced to the determination of  $P(\underline{k}_1, \underline{k}_2, \underline{k}_3, \underline{k}_4)$ . In the centre of

Card 3/13

24481

On the Probability of ....

S/126/61/011/006/007/011  
E032/E314

mass system of two colliding electrons,  $P$  is a function of the following two vectors

$$\underline{k}_0 = \frac{1}{2} (\underline{k}_3 - \underline{k}_2), \quad \underline{k} = \frac{1}{2} (\underline{k}_4 - \underline{k}_1) \quad (4) .$$

The Born approximation will not apply since the sufficient condition for the applicability of this approximation ( $ka \leq 1$ ) is (Ref. 3: Landau, L., Lifshits, E. - Kvantovaya mekhanika, No. 1, GITTL, Moscow-Leningrad, 1948)

$$v \ll \frac{h^2}{\mu a} \quad (5) .$$

In this expression,  $\mu = m/2$  ,

$m$  is the electron mass,

$a$  is a linear dimension of the region within which the potential is

Card 4/13

24481

On the Probability of ....

S/126/61/011/006/007/011  
E032/E314

appreciably different from zero, and  
V is the order of magnitude of this  
potential.

In the present case,  $V = e^2/a$ ,  $a \approx 1 \text{ \AA}$  and  $k$  for  
alkaline metals is of the order of unity. It is then easy  
to see that the condition (5) is not satisfied, and the  
Born approximation cannot be used. A collision theory is  
then used to determine the relation between  $P(\underline{k}_0, \underline{k})$  and  
the differential scattering cross-section  $\sigma(\theta)$ , where  $\theta$   
is the angle between  $\underline{k}_0$  and  $\underline{k}$ . Assuming that the  
probability  $dW_{\underline{k}_0, \underline{k}}$  of transition from the state  $\underline{k}_0$  into  
the interval  $d\underline{k}$  of the  $\underline{k}$  states is given by (Ref. 4:

Bethe et al., Mesons, and Fields (Mezony i polya), Vol. 1,  
1957, IIL, Moscow, pp.66)

Card 5/13

24481

On the Probability of ....

S/126/61/011/006/007/011  
E032/E314

$$dW_{k_0, k} = \frac{2\pi}{h} |T_{k_0, k}|^2 \delta(E_{k_0} - E_k) d^3k. \quad (7)$$

and that only  $\delta_0$  need be retained in the partial wave formula

$$e(\theta, \varphi) = \frac{1}{4\pi} \left| \sum_{l=0}^{\infty} (2l+1) [e^{2i\delta_l} - 1] P_l(\cos \theta) \right|^2. \quad A$$

it is shown that

$$P(k_1, k_2, k_3, k_4) = \frac{8k}{(2\pi)^{2m}} \frac{\sin^2 \delta_0}{|k_1 - k_2|^2} \delta(k_1^2 + k_2^2 - k_3^2 - k_4^2) \times \\ \times \delta(k_1 + k_2 - k_3 - k_4). \quad (11)$$

The formula for  $P(\underline{k}_1)$  then turns out to be:

Card 6/13

35  
40  
45  
50  
55  
Eqs. A and 11 (page 937) attached to plat 24.

24461

On the Probability of ....

S/126/61/011/006/007/011  
E032/E314

$$P(k_2) = \frac{A}{\pi^2} \int_{k_1}^{\sqrt{2k_1^2 - A^2}} (2k_1^2 - A^2 - A^2) A^2 dA_1 \int \frac{\sin^2 \theta \sin \theta}{(k_2 - k_1)^2 |k_2 + k_1|} d\theta, \quad (12)$$

The dependence of  $\delta_0$  on  $k$  is found by numerical integration of the equation

$$y'' + \left[ A^2 - V(r) - \frac{l(l+1)}{r^2} \right] y = 0, \quad (13)$$

where

$$V(r) = \frac{2\pi}{\mu} U(r).$$

Card 7/13

24481

On the Probability of ....

S/126/61/011/006/007/011  
2032/E314

Fig. 1 shows  $\delta_0$  versus  $k$  curves calculated for  $\alpha = 0.8, 1.0$  and  $1.2$ . The curve marked  $\square$  corresponds to the Born approximation (Ref. 3; N.F. Mott and H.S.W. Massey, Theory of Atomic Collisions, IL, Moscow, 1951). Fig. 2 shows  $\sin \delta_0/k$  as a function of  $k$  for different values of  $\alpha$ . Next, the calculations are specialised to the case of sodium ( $k_p = 0.914$ ). Suppose  $k_1 = 0$ , then the angular integral in Eq. (12) can easily be evaluated and the range of  $k$  is shown by the vertical lines in Fig. 2. It is clear from Fig. 2 that in this region

$$\sin \delta_0/k = a - bk \quad (15)$$

Substituting this expression into Eq. (12) and bearing in mind that the relation between the excited-state lifetime  $\Delta t$  and the corresponding energy width is  $\Delta E \Delta t \sim h$ , one is led to the expression

Card 8/13

24481

On the Probability of ....

S/126/61/011/006/007/011  
EO52/E314

$$\Delta E(0) = 1.21 k_F^4 \left[ a^3 - \frac{4ab}{15} (8\sqrt{2} - 7) k_F + \frac{b^3}{3} k_F^2 \right]. \quad (16)$$

where the energy is in eV. Calculations showed that with  $\alpha = 1.2$ ,  $\Delta E(0) = 0.30$  instead of the value 0.77, which was obtained in Ref. 1. Thus the Fern approximation leads to a result which is too high by a factor of 2-3. Fig. 2 indicates that the approximation (15) can be used also for  $k_1 \neq 0$ , particularly for large  $\alpha$ . The final expression is found to be

$$\Delta E(k_1) = 1.21 \left[ a^3 (k_F^2 - k_1^2)^3 + \frac{b^3}{3} (k_F^2 - k_1^2)^2 (k_F^2 + k_1^2) \right] -$$

$$- 2.42ab \left\{ \frac{2}{3} \frac{k_F^6}{k_1} \arcsin \frac{k_1 \sqrt{2k_F^2 - k_1^2}}{k_F^2} \right\}$$

Card 9/13

Eq. (16) (page 938) attached to mod 24.

On the Probability of ....

24481  
S/126/61/011/006/007/011  
E032/E314

$$\begin{aligned}
 & - \frac{1}{6} (k_F^2 + k_i^2)^2 (2k_F^2 - k_i^2) \arcsin \frac{2k_F k_i}{k_F^2 + k_i^2} + \\
 & + \frac{1}{45} \left[ \sqrt{2k_F^2 - k_i^2} (18k_F^4 + 22k_F^2 k_i^2 - 8k_i^4) - \right. \\
 & \left. - k_F (12k_F^2 + 35k_F^2 k_i^2 - 15k_i^4) \right] .
 \end{aligned} \tag{17}$$

and this is plotted in Fig. 3 for  $\alpha = 0.8$  and  $0.6$ . It can be shown that this expression can be approximated to by

$$\Delta E(k_i) = 1.217^2 (k_F^2 - k_i^2)^2 . \tag{18}$$

Card 10/13



On the Probability of ....

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where  $\gamma = \sin \delta_0/k$ . These two formulae do not differ by more than 6% for  $\alpha \geq 0.6$ . Fig. 4 shows the theoretical and experimental curves for the emission  $L_{III}$  band of sodium (Curve 1 - experimental (Ref. 6: Skinner, H.W.B. Rep. Progr. Phys., 1938, 5, 257); Curve 2 - theoretical curve obtained for  $\Delta E(0) = 1.73$  ( $\alpha = 0.6$ )).

There are 4 figures and 7 references: 4 Soviet and 3 non-Soviet. The English-language reference not mentioned above is: Ref. 7 - D. Pines. Adv. Solid, State Phys., 1956, 1, N.Y.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy universitet  
(Rostov-on-Don State University)

SUBMITTED: August 26, 1960

Card 11/13

ACCESSION NR: AP4038791

S/0048/64/028/005/0934/0938

AUTHOR: Shuvayev, A.T.; Chechin, G.M.

TITLE: On the interpretation of X series line shifts in transition elements. Wave functions for three configurations of titanium Report, Seventh Conference on X-Ray Spectroscopy held in Yerevan 23 Sep to 1 Oct 1963/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.5, 1964, 934-938

TOPIC TAGS: x-ray spectrum, line shift, wave function, atomic structure, titanium, electron configuration, iron group transition element

ABSTRACT: Self-consistent (Hartree) wave functions were calculated (without exchange) for Ti (valence electron configuration  $3d^2 4s^2$ ),  $Ti^{2+}$  ( $3d^0 4s^2$ ), and  $Ti^{4+}$  ( $3d^0 4s^0$ ), and the wave functions and energy values are tabulated. The energy values for the configuration  $Ti^{2+}$  ( $3d^2 4s^0$ ) were calculated by a perturbation method, and these are also tabulated. The quantum energies of the  $K\alpha_1$  and  $K\beta_1$  lines were calculated for all four configurations, and that of the  $K\beta_2$  line was calculated for the two configurations for which it exists. The shifts of these lines in passing from Ti ( $3d^2 4s^2$ ) to  $Ti^{2+}$  ( $3d^2 4s^0$ ) or to  $Ti^{2+}$  ( $3d^0 4s^2$ ), and from  $Ti^{2+}$  ( $3d^2 4s^0$ ) to  $Ti^{4+}$

Card 1/2

ACCESSION NR: AP4038791

( $3d^0 4s^0$ ) were calculated and are tabulated. It is assumed that reducing the valence electron density within the atom has a similar but smaller effect on the position of a line as removing electrons entirely, and the following conclusions are drawn from the calculated line shifts attendant on removal of the 3d and/or 4s electrons: 1) The  $K\alpha_{1,2}$  lines are sensitive primarily to the d valence electrons; a decrease of the d electron density shifts the lines toward the longer wavelengths. 2) the  $K\beta_1$  line is sensitive to changes in both the s and d electron densities and is affected oppositely by them; a reduction of the s (d) electron density shifts the line toward the shorter (longer) wavelengths. 3) The  $K\beta_5$  line is very sensitive to the d electron density, a reduction of the density shifting the line toward the shorter wavelengths; this line is also affected by direct interaction of the outer p electrons with the valence electrons of surrounding atoms. These conclusions, based on calculations relating to titanium, are assumed to hold for all the iron group transition elements, and the  $K\alpha_1$ ,  $K\beta_1$  and  $K\beta_5$  shifts in 15 compounds containing Ti, Cr, V, Mn, Fe or Co are interpreted in terms of them. Orig.art.has: 2 formulas and 4 tables.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy universitet (Rostov-on-the-Don State University)

SUBMITTED: 00

DATE ACQ: 12Jun64

ENCL: 00

SUB CODE: OP

NR REF SOV: 005

OTHER:004

Card 2/2

CHECHIN, Yu.A.; SHCHUPAK, Yu.D.

The marking of welding equipment. Avtom./svar. 18 no.10:  
48-49 0 '65. (MIRA 18:12)

1. Groznenskiy neftyanoy institut.

CHECHINA, A. S.

"Effect of the Fatness of a Carp on the Dynamics of Its Parasitic Fauna," Dokl.  
AN SSSR, 86, No 1, 1952

CHERCHINA, A.S.; MALEVITSKAYA, M.A.; KOZONOVA, N.Ye.

Effect of acclimatization of *Ameiurus nebulosus* on its parasites.  
Doklady Akad. nauk SSSR 88 no. 1:173-175 1 Jan 1953. (CIAM 24:1)

1. Presented by Academician K. I. Skryabin 5 November 1952. 2.  
Scientific-Research Institute of the Pond, Lake, and River Fish Industry of the Ukrainian SSR and the Belorussian Division of VNIORZh.

CHECHINA, A.S. Cand Biol Sci (diss) "<sup>Diseases of</sup> ~~Sickness in~~ fish and measures  
to combat <sup>them in</sup> ~~the~~ pond fisheries of the BSSR." [Len] 1957 12 pp 20 cm.  
<sup>Min of the Fish Industry USSR.</sup>  
(~~USSR Min Fisheries~~, All-Union Sci <sup>g</sup> ~~Res~~ Inst of Lake and River  
Fisheries) 150 copies  
(KL, 11-57, 97)

CHECHINA, A.S.

Sanguinicola infestations and measures for their control on  
pond fish farms of the White Russian S.S.R. Trudy sov. Ikht.  
kom. no.9:57-59 '59. (MIRA 13:5)

1. Belorusskoye otdeleniye Vsesoyuznogo nauchno-issledovatel'-  
skogo instituta ozernogo i rechnogo rybnogo khozyaystva.  
(White Russia--Termetoda) (Parasites--Carp)



L 9445-66 EWT(m)/EWP(k)/EWP(b)/T/ EWP(t)/EWP(w) JD	
ACC NR: AP5026561	SOURCE CODE: UR/0286/65/000/019/0120/0120
INVENTOR: <u>Gryaznov, Ye. M.</u> ; <u>Podlazov, S. S.</u> ; <u>Chechina, L. G.</u> ; <u>Yakhimovich, D. F.</u> <span style="float: right;">38</span>	
ORG: none <span style="float: right;">B</span>	
TITLE: Device for <u>ultrasonic machining</u> . Class 49, No. 175376	
SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 19, 1965, 120	
TOPIC TAGS: machining, ultrasonic machining, ultrasonic tool	
ABSTRACT: This Author Certificate introduces a tool for ultrasonic machining of holes in hard and brittle material parts. To reduce heating of the tool, its front and rear parts are made of wear-resistant material, such as steel, while the middle part is made of material with high heat conductivity, such as brass. Orig. art. has: 1 figure. [ND]	
SUB CODE: 06, 09/ SUBM DATE: 17Jul62/ ATD PRESS: 4155	
JW Card 1/1	UDC: 621.9.048.6.022

L 07352-67 EWT(d)/EWT(m)/EWP(v)/EWP(t)/ETI/EWP(k)/EWP(h)/EWP(l) IJP(c) JD

ACC NR: AP6012171

SOURCE CODE: UR/0413/66/000/007/0100/0100

AUTHORS: Yakhimovich, D. F.; Chechina, L. G.; Zhivitskiy, A. S.; Gryaznov, Ye. M.

ORG: none

TITLE: An instrument for cutting several objects from hard and brittle materials.  
Class 49, No. 180474

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 7, 1966, 100

TOPIC TAGS: ultrasound, ultrasonic machining, ultrasonic equipment

ABSTRACT: This Author Certificate presents an instrument for cutting several objects from hard and brittle materials. The instrument is made in the form of a concentrator with a separating plate attached to it. The plate carries a number of cutting blades (see Fig. 1). To preserve an identical amplitude of oscillations for all the blades, openings or slits are produced over the entire face of the blade group and over the whole transverse section of the concentrator. The depth of openings or of slits reaches to the translocation plane of nodes of the longitudinal oscillations. The external contours of the intermediate plate and

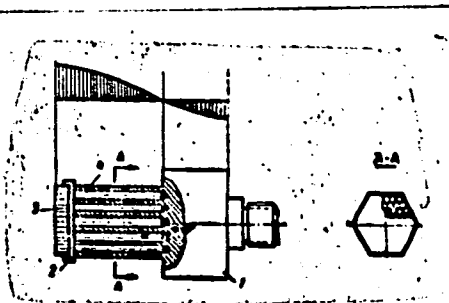
Card 1/2

UDC: 621.9.048.6.06

L 07352-67

ACC NR: AP6012171

Fig. 1. 1 - waveguide; 2 - plate;  
3 - assembly of cutting blades;  
4 - openings or slits



of the outflow stage of the concentrator correspond to the external contour of the cutting blades assembly. Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 31Jan64

Card 2/2 a/s

CHECHINA N. A.

N/5  
105.2  
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Sbornik zadach po sovetskomu grazhdanskomu protsessu  
(Collection of articles in the soviet civil process, by)  
N. I. Avdeyenko, O. N. Stepanova i N. A. Chechina.  
Leningrad, Akademkniga, 1954.  
127 p.  
At head of title: Leningrad. Universitet.

CHECHINA, N.A.; USHKOV, B.I.

Court jurisdiction in the examination of the workers' and  
employees' labor disputes. Uch.zap.LGU no.274:64-72 '59.  
(MIRA 13:5)

(Labor disputes)

LEVIN, A.I.; CHECHINA, O.N.; SOKOLOV, S.V.

Synthesis of  $\alpha, \omega$ -dihydroperfluoroparaffins from  $\omega$ -hydroperfluorinated acids by Kolbes reaction. Zhur. ob. khim. 35 no.10: 1778-1781 O '65. (MIRA 18:10)

38222  
S/032/62/028/006/006/025  
B110/B101

11. C/30

AUTHORS: Morekhin, M. G., Ageyev, S. I., Matyash, O. Ye., and Chechina, T. G.

TITLE: A colorimetric method of determining the water content in kerosene

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 6, 1962, 670

TEXT: White, anhydrous  $\text{CuSO}_4$  added to hydrocarbons for the purpose of determining their water content formed a blue crystal hydrate with the water. The standards were prepared from 1 liter fuel filtered off with calcined copper sulfate was mixed with 0.2, 0.4, 0.6, 0.8, or 1.0 g of water and filtered off with glass filters containing freshly calcined  $\text{CuSO}_4$ . The color filtrates stored under exclusion of air remained usable for one month. The fuel to be analyzed was treated similarly, and the resulting color shade was compared with the standards. In this way, an amount of 0.30 g/liter was ascertained as compared with calculated water content of 0.28 g/liter, and 0.20 g/liter as compared with 0.175 g/liter.  
Card 1/1

DAMASKIN, B.I., doktor tekhn. nauk, prof.; CHECHKIN, A.M., assistant

Determining the rigidity of the traction elements of conveyors  
for the shoe industry. Nauch. trudy MTILF no.29:264-269 '64.

(MIRA 18:4)

1. Kafedra detaley mashin Moskovskogo tekhnologicheskogo instituta  
legkoy promyshlennosti.



CHECHKIN, M., kapitan-nastavnik

Yenisey will be still more beautiful. Rech. transp. 20  
no.12:5 D '61. (MIRA 14:12)

1. Yeniseyskoye parokhodstvo.  
(Yenisey River)

*CHECHKIN, S.*  
CHECHKIN, S., inzh.-mayor

~~passability of frozen marshes.~~ Voenn.-inzh. zhur. 101 no.1:42-43  
Ja '58. (MIRA 11:2)  
(Marshes) (Winter warfare)

CHECHKIN, S.A.

Calculating the moisture and thermal characteristics of frozen  
swamps. Meteor. i gidrol. no.2:33-36 F '61. (MIRA 14:1)  
(Swamps) (Frozen ground)

CHECHKIN, S.A.

Temperature regime of logs. Study GGI no.126:113-131 '65.

(MIRA 18:8)

25375

S/089/61/011/001/004/010

B102/B214

24.6731

9.4230

**AUTHORS:** Khizhnyak, N. A., Tolok, V. T., Chechkin, V. V., Nazarov, N.I.

**TITLE:** The possibility of acceleration of large pulsed currents in electron linear-accelerators

**PERIODICAL:** Atomnaya ~~energ~~iya, v. 11, no. 1, 1961, 34 - 40

**TEXT:** This paper presents an evaluation of the suitability of different electron linear accelerators for accelerating intensive pulsed currents since their region of application is only incompletely known as yet. The theoretical studies published here are based essentially on the work carried out over many years at the Fiziko-tehnicheskii institut AN USSR (Institute of Physics and Technology AS UkrSSR), Kharkov. First, the acceleration of pulsed currents in electron traveling-wave linear-accelerators is discussed. The effect of the pulsed beam on a traveling - wave accelerator ( $\pi/2$  wave,  $\lambda \approx 10$  cm) and a waveguide type accelerator is studied. The most important effects are three: 1) A change of electrodynamic acceleration conditions. For  $v \approx c$  the electron beam affects the electrodynamic properties very little, for  $v_0 < c$  much more. With a load of a

Card 1/4

25375

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The possibility of ...

current of  $\sim 1$  a the amount of change in the phase velocity of the wave is  $\Delta\beta = 2.6\%$  ( $\beta = 0.5$ ),  $1.3\%$  ( $\beta = 0.7$ ),  $0.25\%$  ( $\beta = 0.9$ ); ( $\beta = v/c$ ). 2) Effect of the energy ratios in the accelerating system. There is a displacement of the synchronous phase toward the wave peak, i.e. toward the limit of the region of phase stability. It is possible to improve the energy ratios by increasing the injection energy of the electrons or enlarging the section with an alternating phase velocity of the wave. In sections with constant phase velocity ( $=c$ ), the loading of the accelerator by the electron beam leads to a decrease of the electron energy at the output of the accelerator. For example, 12 Mw are required to obtain a pulsed current with 1a and 5 Mev having a width of the energy spectrum of 10%. 3) Effect of the dynamic conditions in traveling - wave accelerators. There is an upper limit of the current; for example, at an accelerating field of  $E_z \approx 100$  kv/cm this limit lies at 10 a. In the following the acceleration of pulsed currents in linear accelerators with standing waves is discussed in an analogous manner. An acceleration system is considered which consists of one or more connected endovibrators in standing - wave operation ( $\pi$  waves,  $\lambda \approx 2m$ ). In the decelerating phase, the beam is screened off from

Card 2/4

25375

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The possibility of ...

the field by drift tubes. For the acceleration of higher currents, this system has a number of advantages over the traveling-wave system, as there are: 1) Change of the electrodynamic conditions. When the condition  $14.4 \cdot 10^{-6} (\lambda/R)^4 J < 1/Q_0 + JW/Q_0 D_0$  is satisfied, the change of the electrodynamic properties caused by the electron beam does not limit the accelerated current. ( $Q_0$  is the quality factor of the unloaded resonator,  $JW$  the h. f. power loss to the acceleration of the current of  $J$  amperes,  $D_0$  the h.f. power losses to the walls of the system, and  $R$  the radius of the endovibrator.) 2) Change of the electrical conditions of acceleration. There is a lowering of the pulse duration, and there is an optimal energy given by  $W_{opt} = 1.44 \cdot 10^{-5} Q_0 D_0$ . The maximum charge that can be accelerated to  $W_{opt}$  is  $Jt = 2 \cdot 10^{-4} \Delta E/E$  coulomb. This type of accelerator can accelerate much higher currents than the one mentioned before. Finally, the problem of particle dynamics in a standing wave accelerator is discussed. The longitudinal (phase) and transverse (radial) motions are separately discussed. The authors thank K. D. Sinel'nikov, and Ya. B. Faynberg for

Card 3/4

25375

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B102/B214

The possibility of ...

discussions. A. I. Akhiyezer and N. P. Selivanov are mentioned. There are 2 figures.

SUBMITTED: July 10, 1960

Card 4/4



24.6731

S/089/61/011/001/005/010  
B102/B214

AUTHORS: Tolok, V. T., Bolotin, L. I., Chechkin, V. V., Nazarov, N. I.,  
Khizhnyak, N. A.

TITLE: A high-current electron accelerator

PERIODICAL: Atomnaya energiya, v. 11, no. 1, 1961, 41 - 45

TEXT: This paper presents a description of the 5-Mev electron linear-accelerator designed, built, and studied in 1955 at the Fiziko—tekhnicheskoy institut AN USSR (Institute of Physics and Technology AS UkrSSR). The acceleration system consists of two coupled endovibrators excited to standing  $\pi$  waves with  $f = 137.4 \cdot 10^{-6}$  cps. The accelerator is fed by 12 autogenerators each of which delivers to the endovibrators up to 100 kw with a pulse duration of 400  $\mu$ sec. Each resonator is a 16-faced prism, 1100 mm long, the diameter of the inscribed circle of the prisms being 1500 mm. The prisms are made of 1 mm thick copper strips secured to a solid body. The drift tubes (100 mm diameter) form accelerating gaps, each 600 mm long. The h.f. generators work in two cycles with self excitation. The 12 modulators deliver at the anodes of the generator-tubes voltage

Card 1/4

25376

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A high-current electron ...

pulses of up to 25 kv. The resonators are kept in a vacuum chamber maintained at a pressure of  $(1-2) \cdot 10^{-6}$  mm Hg by two diffusion pumps. The electron gun (with tungsten cathode in the form of a flat spiral) is placed inside the drift tube. A special modulator supplies the gun cathode with negative voltage pulses of up to 70 kv and durations of  $0.2 \cdot 10^{-6}$  and  $2 \cdot 10^{-6}$  sec. In normal operation the injection current is 6 a; on pulsed over-heating of the spiral it amounts to 40 a. The construction of the injector provides for the possibility of using an L - cathode. The phase difference of the  $\pi$  vibrations in the resonators is checked by an electron-beam phase meter, and the pulse height by a two-beam oscilloscope. The radial focusing of the beam at the output of the injector is accomplished by the radial component of the h.f. field. The electron velocity at the output of the first acceleration gap is almost equal to the velocity of light and is not further affected by the radial component of the field. In the first gap there appears also a bunching effect which narrows the phase width of the beam from 2.2 to 1.6 radians, which value remains practically constant in the following gaps. At the exit of the accelerator the beam cross section is  $\sim 10$  mm with an aureole of about 60 mm. It is focused on

Card 2/4

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A high-current electron ...

the target by means of two magnetic lenses; its diameter then becomes 3 mm. To study the possibility of obtaining the maximum current, the particle energy spectra were recorded at the output of the accelerator for different currents. The following results were obtained: A current of 8.5 a with a pulse duration of 0.2  $\mu$ sec is obtained for an electron energy of 4.5 Mev. A current of 15 a with a pulse duration of 0.2  $\mu$ sec and an electron energy of 3.8 Mev is yielded from the maximum of the charge that can be accelerated ( $3 \cdot 10^{-6}$  coulomb). At this pulse duration a current of up to 25 a may be obtained, but the maximum electron energy is only 3 Mev and the energy spectrum is broader. To reduce this fall of energy and the consequent broadening of the spectrum it is necessary to increase the energy fed to the resonators. A further decrease of the electron energy for obtaining increased current is not convenient because for radial focusing the electron must have relativistic velocity in the first gap. The value of the time average of the current for this accelerator is up to 50  $\mu$ a for 15 pulses/sec, which must be increased to 100-150 pulses/sec for increasing the average current. The authors thank K. D. Sinel'nikov, P. M. Zeydlits, and Ya. B. Faynberg for discussions. V. I. Veksler and V. V. Vladimirovskiy are mentioned.

Card 3/4

A high-current electron ..."

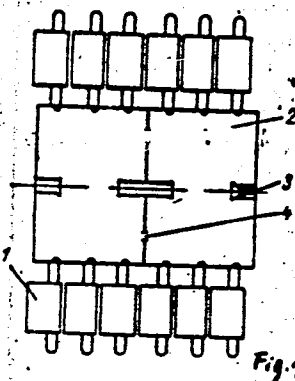
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S/089/61/011/001/005/010  
B102/B214

There are 5 figures and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc.  
The reference to the English-language publication reads as follows: M.  
Kelliher, J. Nugard, A. Gale. IRE Trans. Nucl. Sci., No. 3, 1 (1956).

SUBMITTED: July 26, 1960

Legend to Fig.1: 1) generator, 2) resonator,  
3) electron gun, 4) connecting opening.



Card 4/4